Exhibit F

Exhibit F – Albemarle Amateur Radio club report on notching before system-wide notching was removed by IBEC subsequent to this testing

BPL Testing - Nelson County, VA
Conducted 8:30 am-1:00pm on 12/8/2004

Introduction – Signals vs Interference

To fully appreciate this report it is important to review a few terms. For the purpose of this report a **signal** is an intentional emission of intelligence using allocated spectrum in the radio frequencies. **Interference** at these frequencies can be from natural sources or man made. When one signal makes it difficult for the other to be received, it is said to **interfere** with that signal. There are specific rules for dealing with interference. Frequency allocations are made by the Federal Communications Commission to licensed services. The Commission also has rules for secondary services and for "unlicensed" devices. The rules for unlicensed devices are referred to as Part 15. When a Part 15 device interferes with a licensed service, the Federal Communications Commission places the responsibility to resolve the interference problem on the Part 15 emitter.

It is important to note that the nature of the BPL signal is fundamentally different from the signals typically found within this portion of the radio spectrum. In the HF spectrum signals are normally discrete, that is they occupy a small portion of the spectrum and it is normally possible for an operator to avoid the interference by tuning away from the undesired signal. Where BPL signals are encountered this is not possible because they occupy a large portion of the spectrum with the exception of the pass bands where they are notched out.

In December 2004, the BPL committee of the Albemarle Amateur Radio Club conducted an initial test of the BPL system installed by IBEC at the Central Virginia Electric Cooperative (CVEC) in Nelson County, Virginia. IBEC's system employs a notching scheme intended to reduce BPL signal strength in the HF amateur radio bands. IBEC provided a copy of their spectral mask showing the location and depth of these notches, which is included as Appendix A. The test was designed by the BPL committee and conducted with the cooperation of IBEC and CVEC. The test had several objectives, namely:

1. To determine the effectiveness of IBEC's notching of the HF amateur radio bands.
2. To determine the level of potential interference to Short-wave Listening Bands, the low VHF public service frequencies, the frequencies used by the National Radio Astronomy Observatory and the frequencies used by the air traffic system.
3. To model the behavior of the system when the number of active users increases and traffic approaches saturation.
4. To determine the potential impact of amateur radio transmissions near the BPL system.

Test Equipment Used:

(K4AZV) Kenwood TS480SAT w/Hamstick antennas, noise reduction and digital noise limiting.
(KD4BMQ & WK4Y) Icom IC-706 MKIIG with a Tar heel antenna
(AD6JV) Elecraft K-2 with Hamsticks in Vertical and Horizontal polarization
(KB1DOE) Radio Shack mobile scanner for low band VHF

The testers assembled at various points along the BPL system. Two mobile units were at the site where the signal injector is located-one with a scanner and one with an HF radio. One mobile unit with an HF radio was positioned at the site of a regenerator unit that was close to an active BPL customer. One mobile unit was positioned at the site of a remote regenerator where there were no customers in the vicinity. It must be observed that the mobile stations using the Tarheel ™ and Hamstick™ antennas in this initial test are not as sensitive as the equipment and antennas found in most home based amateur radio stations.

Test observations as Follows:

Throughout the system and noticed by all testers, including the chief engineer for IBEC who was accompanying one of the testers in a vehicle our observations were:

- There was no perceptible BPL signal received on the 160-meter 80-meter or 40-meter bands.
- On the 60-meter band, a considerable amount of "typewriter" type BPL signal from just above the noise floor to S6 interference levels.
- At the signal injector site, S9 BPL signal levels were heard just below the 20-meter band with readings at S1 to S3 in the band.
- In the 17-meter, 15-meter, 12-meter and 10-meter bands there was no
  BPL signal heard.
- There were S1 typewriter type BPL signal levels at 6-meters.
- On the SWL frequencies the testers heard BPL signals between S3 and 30 db over 9 noise levels depending on the position along the transmission line.
- There was no BPL signal heard around the 120 MHz airline band.
- The public service band between 38 MHz and 47 MHz experienced harmonic interference from the main signal.
- The WWV at 5 MHz, 15 MHz and 20 MHz experienced noise from S3 to 20 db over 9 depending on the receivers' position along the

transmission line.

The strongest signals during the testing were in the 4 MHz, 5 MHz and 11-13 MHz areas. These signals stretched evenly through the bands. Relative signal strength received does not change by tuning to different frequencies but rather by moving along the MV distribution line.

Test Results - Conclusions vs. Objectives

1. On this day of testing we did detect BPL signals in the 60 –meter, 20-meter and 6-meter amateur bands while measuring directly underneath the power-lines. The BPL signal on the 6-meter and 20-meter bands diminished when one moved beyond a distance of 100 –feet from the power-line. The BPL signal was also detected on short wave listening and WWV frequencies. No BPL signal was detected on the amateur 160-meter, 80-meter, 40-meter, 17-meter, 15-meter, 12-meter or 10-meter bands or the air traffic control bands.

No testing was performed on the amateur VHF above 54 mHz or UHF frequency bands.

Harmonics of the BPL signal were received in the public service band and the 6-meter band when parked directly under the power-line. These signals were detected up to 100 feet from the power-line. Amateur radio operators using the HF spectrum often operate using weak signal modes. It remains to be seen whether or not the 60-meter band will be effectively notched out by the second generation BPL equipment.

2. There was considerable BPL signal noted on the short wave listening (SWL) frequencies and on the WWV frequencies at proximity, however some SWL and WWV signals were readable. It is believed by those in the amateur community that a fully populated system makes listening annoying and difficult. This level of interference is unacceptable for it renders these frequencies useless for anyone in close proximity to the lines and would obliterate any SWL signal or WWV signal.

The low VHF public service frequencies experienced detectable harmonics from the main BPL signal. This is unacceptable as several of the local fire and rescue organizations depend upon these frequencies for communications. Because the regenerators act as packet relay devices, there is never more than one transmitting in a region at a time (within 1-1.5 miles). Because of this, radiation from the units will not combine to form a coordinated stronger signal than that produced from an individual device. The effect of a fully populated system here cannot be determined. We did not have the appropriate equipment to test with regard to the National Radio Astronomy Observatory frequencies. There was no noise detected during the test in the VHF air traffic band.

3. The test was unable to determine the impact of a fully populated system. At the time of the test, IBEC had upwards of 70 customers actively taking service utilizing

the BPL system. IBEC did assist us by downloading several large files during the test. The nature of the IBEC system is such that data transfer will always be "bursty" in nature and separated by periods of inactivity. These files proved to be inadequate to simulate a fully saturated system. A fully saturated system will fill in the spaces between the "typewriter" noise associated with BPL making it more of a constant static rather than a punctuated erratic signal. It is also believed that the effects of a fully populated system with relatively non-punctuated data will severely effect reception of SWL and WWV signals in the range of distance from the power line as specified in our testing. CVEC's planned future deployment in the Lake Monticello area of Fluvanna County will demonstrate the impact of density on the system as all of the residents of the community will be within 100 feet of the power lines or homes using the system.

4. **Testing was inconclusive with regards to interference to BPL signals by amateur radio transmissions.**

From our understanding, according to what IBEC's chief engineer said, the only way to disable the BPL system would be to have a lineman from the power company disconnect power from each regenerator. The engineer stated that even with the power pulled to a single regenerator, other regenerators on the network will still "talk to each other."

The results reported above are representative of our findings during the test period. Given the nature of the system design and the dynamic nature of the way the IBEC's BPL system selects and uses frequencies (random algorithm), within the frequencies the system uses, the results of future tests are subject to change. Since there were BPL signals heard, this report will be generated and distributed to all parties who have an interest in these frequencies. We plan to conduct a second round of testing utilizing more sensitive testing equipment, which unfortunately was not available to us during this first test. The Nelson County Communications Director, the Nelson County Emergency Service Coordinator, a representative from Fluvanna County and reporters from the local media, will be invited to accompany us.

It is clear on the day of our test that **IBEC's notching scheme was not successful on the lower portion of the 20-meter band.** It was also clear that **the initial version of IBEC's notching scheme does not include the 60-meter amateur band.** IBEC has promised a "second generation regenerator" to be available some time in early 2005 which they believe will be effective in notching out interference from the 60-meter band and additional FCC "stay out" frequencies. After this second-generation equipment is installed, the second round of testing will be undertaken. IBEC displays a continued interest in making their product better and it seems would like very much to not interfere with amateur radio communications.

We would like to thank K4DU, K4AZV, K4BMM, AD6JV, KB1DOE, KD4BMQ and

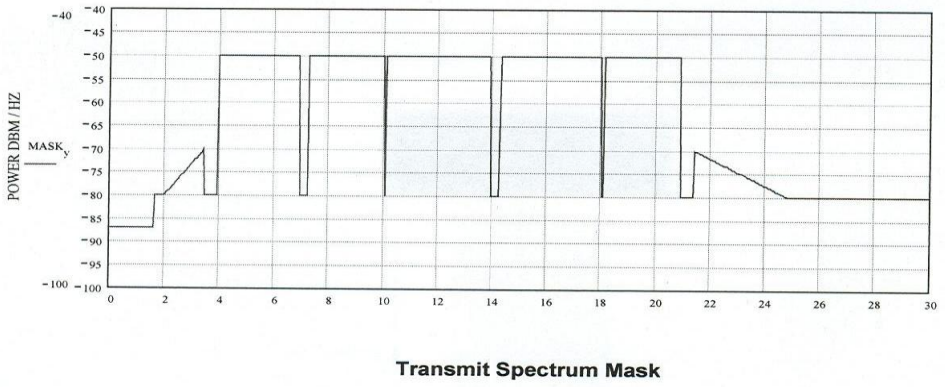
WK4Y for their participation in this testing. We would also like to thank KB4SL (from IBEC), the IBEC staff and the CVEC staff for their assistance in arranging and performing these tests.

As amateur radio operators, we pride ourselves in being at the forefront of communication developments. We hope the information in this report will provide beneficial information for all parties involved.

For the Albemarle Amateur Radio Club

Jay Rostow, K4AZV – President

Appendix A
IBEC Spectral Mask



Transmit Spectrum Mask

Appendix B
Test Data

Band	Listen From	Listen To	Comments - Note Frequencies with BPL Signal and Signal Strength levels
160	1.750 Mhz	2.250 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 and 100 feet from the line.
80	3.475 Mhz	4.025 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 and 100 feet from the line.
60	5.30 Mhz	5.430 Mhz	(**Beneath line**) Substantial typewriter noise (hamstick vertical), 5.3 mHz typewriter noise above noise floor using horizontal polorization (AD6JV), (**25 Ft from power company feed point**) Quiet (**Directly under Power Co. Feed point)** typewriter noise strongest at the low end of 60 meter band. (K4AZV) **Rte 739 at bridge** BPL signal S5 to S6. (K4AZV) **29 & ballfield** 4.6 mHz S7, 4.9 mHz S5, 5.3 mHz S6, 5,430 mHz S5 to S6. At 25 feet the signal reduces to S3. At 50 and 100 feet the signal is heard but does not move the S meter.
40	6.975 Mhz	7.325 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 feet from the line. At 100 feet from the line an S3 signal is detected at 7.4 mHz.
30	10.075 Mhz	10.175 Mhz	(K4AZV) **Rt 29 & ballfield** barely audiable "pops" at 13.175 mHz at 50 feet from the line.
20	13.75 Mhz	14.375 Mhz	(**Beneath line**) Substantial (S9) typewriter noise just below 14.000 (hamstick vertical) (AD6JV), No BPL signal discernable using horizontal polarization (AD6JV). (**At 25 Feet**) Typewriter noise S8-S9 13.89-13.95 mHz. (K4AZV), **Rte 739 at bridge** at 13.750 BPL signal S2. At **Rt 29 & the ballfield** an S7 BPL signal is detected at 14.472 mHz.
17	18.043 Mhz	18.192 Mhz	Quiet (AD6JV)
15	20.975 Mhz	21.475 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 feet from the line.
12	24.640 Mhz	25.14 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 feet from the line.
10	27.75 Mhz	29.95 Mhz	Quiet (K4AZV) **Rt 29 & ballfield** at 50 feet from the line.
WWV			(K4AZV) **739 at bridge**, 5 mHz, 15mHz & 20 mHz BPL signal 10-20 db +9. (K4AZV) **Rt 29 & ballfield** BPL signal S3-S4.
Public Service			(K4AZV) **739 at bridge** - BPL signal detectable. (K4AZV) **Rt 29 & ballfield** 31.4 mHz to 38 mHz BPL signal harmonic detected also at 42.6 mHz, 44.7 mHz and 50 mHz. At 50 mHz the BPL signal reduces to S1 signal levels.(KB1DOE) **at injection point** detected BPL signal on numerous frequencies between 42 mHz and 47 mHz, strongest at the pole, diminishing to zero at 100 feet from the injection point.
	38.00 Mhz	47 Mhz	
Aircraft	127.00 Mhz	135.00 Mhz	(KB1DOE) **at injection point,** no BPL signal heard
NRAO	74.00 Mhz	75.00 Mhz	**NO TEST CONDUCTED AT THESE FREQUENCIES**
SWL	5.900 Mhz	11.800 Mhz	(K4AZV) **739 at bridge** - BPL signal S7 under the line. (K4AZV) **Rt 29 & ballfield** at 50 feet from the line on 11.250 mHz the BPL signal is S7 to S9. At **Rt 29 & the ballfield** at a distance of 100 feet from the line the signal peaks at S3 in the range.
	12.00 mHz	24 mHz	(K4AZV) **739 at bridge** - 12 mHz and up BPL signal S9 under the line. (K4AZV) **Rt 29 & ballfield** at 25 feet from the line at 13 mHz the signal strength varies from S3 to 30 db over S9.